

must be adequately reinforced to ensure sufficient strength and resistance to plate buckling. The cognizant OCMI may require the owner to submit detailed calculations on the strength of the mast, post, yards, booms, bowsprits, and standing rigging to the Marine Safety Center for evaluation.

§ 177.340 Alternate design considerations.

When the structure of vessel is of novel design, unusual form, or special materials, which cannot be reviewed or approved in accordance with §§ 177.300, 177.310 or 177.315, the structure may be approved by the Commanding Officer, Marine Safety Center, when it can be shown by systematic analysis based on engineering principles that the structure provides adequate safety and strength. The owner shall submit detailed plans, material component specifications, and design criteria, including the expected operating environment, resulting loads on the vessel, and design limitations for such vessel, to the Marine Safety Center.

Subpart D—Fire Protection

§ 177.405 General arrangement and outfitting.

(a) *Fire hazards to be minimized.* The general construction of the vessel must be such as to minimize fire hazards insofar as it is reasonable and practicable.

(b) *Combustibles insulated from heated surfaces.* Internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition must be kept clear of and suitably insulated from combustible material. Dry exhaust systems for internal combustion engines on wooden or fiber reinforced plastic vessels must be installed in accordance with American Boat and Yacht Council (ABYC) Standard P-1 "Installation of Exhaust Systems for Propulsion and Auxiliary Engines."

(c) *Separation of machinery and fuel tank spaces from accommodation spaces.* Machinery and fuel tank spaces must be separated from accommodation spaces by boundaries that prevent the passage of vapors.

(d) *Paint and flammable liquid lockers.* Paint and flammable liquid lockers

must be constructed of steel or equivalent material, or wholly lined with steel or equivalent material.

(e) *Vapor barriers.* Vapor barriers must be provided where insulation of any type is used in spaces where flammable and combustible liquids or vapors are present, such as machinery spaces and paint lockers.

(f) *Waste receptacles.* Unless other means are provided to ensure that a potential waste receptacle fire would be limited to the receptacle, waste receptacles must be constructed of non-combustible materials with no openings in the sides or bottom.

(g) *Mattresses.* All mattresses must comply with either:

(1) The U.S. Department of Commerce "Standard for Mattress Flammability" (FF 4-72.16), 16 CFR Part 1632, Subpart A and not contain polyurethane foam; or

(2) International Maritime Organization Resolution A.688(17) "Fire Test Procedures For Ignitability of Bedding Components." Mattresses that are tested to this standard may contain polyurethane foam.

§ 177.410 Structural fire protection.

(a) *Cooking areas.* Vertical or horizontal surfaces within 910 millimeters (3 feet) of cooking appliances must have an American Society for Testing and Materials (ASTM) E-84 "Surface Burning Characteristics of Building Materials" flame spread rating of not more than 75. Curtains, draperies, or free hanging fabrics must not be fitted within 910 millimeters (3 feet) of cooking or heating appliances.

(b) *Fiber reinforced plastic.* When the hull, decks, deckhouse, or superstructure of a vessel is partially or completely constructed of fiber reinforced plastic, including composite construction, the resin used must have an ASTM E-84 flame spread rating of not more than 100.

(c) *Use of general purpose resin.* General purpose resins may be used in lieu of those having an ASTM E-84 flame spread rating of not more than 100 provided that the following additional requirements are met:

(1) *Cooking and heating appliances.* Galleys must be surrounded by B-15 Class fire boundaries. This may not